

**REMARKS**

Claims 1 through 8 and 12 through 16 and new Claim 17 are pending in the application.

Claims 1 and 13 have been amended to reflect that the surface energy of greater than 35 dyn/cm effects uniform application of the liquid smoke. Support for this amendment can be found in the Application-as-filed, for example on Page 3, line 33 through Page 4, line 1.

Claims 1 and 13 have been amended to reflect advantageous inventive casings in which a liquid smoke application time of at least 5 days is not necessary. Support for this amendment can be found in the Application-as-filed, for example on Page 7, lines 16 through 21.

Claim 15 has been amended to recite "additive to set viscosity" in lieu of the equivalent phrase "viscosifier." Support for this amendment can be found in the Application-as-filed, for example on Page 4, line 34 through Page 5, line 1.

Claim 17 has been added to complete the record for examination and highlight advantageous embodiments of the invention.

Claim 17 is directed to advantageous embodiments in which the recited surface energy imparts uniformity in wetting the liquid smoke on the inside of the casing. Support for Claim 17 can be found in the Application-as-filed, for example on Page 4, lines 17 through 20.

Applicants respectfully submit that this response does not raise new issues, but merely places the above-referenced application either in condition for allowance, or alternatively, in better form for appeal. Reexamination and reconsideration of this application, withdrawal of all rejections, and formal notification of the allowability of the pending claims are earnestly solicited in light of the remarks which follow.

Section 112 Rejection

Claim 15 stands rejected over the term “viscosifier.” Applicants respectfully submit that the Application-as-filed on Page 4, line 33 through Page 5, line 1 clearly indicates that a component may be added to adjust the viscosity of the liquid smoke. Applicants thus respectfully submit that the Application-as-filed clearly conveyed with reasonable clarity to one skilled in the art that Applicants were in possession of the claimed invention as of the filing date sought. Applicants further respectfully submit that the subject matter of the claims need not be described literally within the remainder the specification, i.e. word-for-word correspondence is not required. MPEP 2163.02. However, solely to advance prosecution of the case, Claim 15 has been amended to recite “additive to set viscosity” in lieu of the equivalent phrase “viscosifier.” Applicants further respectfully submit the Application-as-filed indicates that carboxymethylcellulose or “similar” additive may be used to adjust viscosity, hence Applicants are clearly entitled to a broader scope of protection than merely “carboxymethylcellulose,” as urged within the outstanding Office Action on Page 2, Ref. No. 3. Accordingly, Applicants respectfully request withdrawal of the foregoing rejection.

Claim 16 stands rejected over the recitation “liquid smoke has a viscosity ranging from 15 s to 18 s.” Applicants respectfully submit that the noted values, gleaned from the working examples, do, in fact, clearly convey to one skilled in the art that the inventors had possession of the claimed invention at the time the Application was filed. Specifically, the cited values clearly indicate that both a viscosity of 15 s and a viscosity of 18 s impart acceptable liquid smoke wetting uniformity. Furthermore, one skilled in the art would readily understand that viscosities between the exemplary 15 and 18 s would likewise impart acceptable liquid smoke wetting uniformity. Applicants thus respectfully submit that the Application-as-filed clearly conveyed with reasonable clarity to one skilled in the art that Applicants were in possession of the claimed invention as of the filing date sought. Applicants further respectfully submit that the subject matter of the claims need not be described literally within the remainder the specification, i.e. word-for-word correspondence is not required. MPEP 2163.02. Accordingly, Applicants respectfully request withdrawal of the foregoing rejection.

*The Claimed Invention is Patentable*

*in Light of the Art of Record*

Claims 1 through 8 and 12 through 16 stand rejected over United States Patent Application Publication No. 2003/0059502 to Krallman et al., which matured into United States Patent No. 7,022,357 ("US 357"), in light of United States Patent No. 5,399,427 to Stenger et al. ("US 427"); United States Patent No. 6,221,410 to Ramesh et al. ("US 410") and United States Patent No. 4,897,295 to Erk et al. ("US 295").

It may be useful to briefly consider the invention before turning to the merits of the rejection.

Food casings imparting a smoke flavor and dark coloration to foodstuffs contained therein are highly advantageous. Unfortunately, it is quite difficult to incorporate a sufficient amount of smoke flavoring into food casings for subsequent transfer into the foodstuff. Heretofore known smoke transport casings must be stored in contact with the smoke coating for extremely long periods of time, such as the 5 to 10 days noted within US 357, prior to shirring and stuffing. Applicants have found that casing layers formed from wettable, at least moderately swellable polymers that are of sufficient thickness can absorb quite elevated amounts of liquid smoke that is used to impart a smoky flavor and dark coloration to foodstuffs, such that the heretofore known extended smoke coating soak times are no longer required.

Applicants have more particularly found that liquid-smoke-impregnated, tubular, single-layer or multilayered food casings comprising a single-layer which is based on polyamide and/or copolyamide alone, or comprising an inner layer based on polyamide and/or copolyamide alone, in which the inside of the casing has a surface energy of greater than 35 dyn/cm that further have a swelling value of at least 10 % may readily be impregnated on the inside with liquid smoke, such that an additional browning agent is not required, as recited in Claim 1. The avoidance of browning agent was quite surprising as browning agents are well known for use in smoke formulations, as evidenced by the primary reference.

In fact, the inventive casings provide such elevated absorption properties that the heretofore known liquid smoke application time of at least 5 days is likewise unnecessary, as recited in the claims as-amended. Such a result was altogether unexpected by those skilled in the art, particularly in light of the absence of additional browning agent.

In especially advantageous embodiments, the inventive food casings incorporate polyamide and/or copolyamide alone as a sole or inner layer having a surface energy of greater than 35 dyn/cm and either a single-layered thickness of 50 to 130  $\mu\text{m}$  or a polyamide inner layer thickness of 15 to 27  $\mu\text{m}$  in which the casing or the polyamide inner layer of the casing has a swelling value of at least 10 wt % and the foregoing properties permit the impregnation of the casing with liquid smoke in the absence of an additional browning agent, as recited in Claim 13.

In addition to a suitably elevated surface energy and absorbent layer thickness, Applicants have further determined that liquid smoke viscosity can be selected such that the resulting liquid smoke wets the inside of the casing uniformly without coalescing or forming drops, thereby providing a more uniform liquid smoke coating. In that regard, the Examiner's attention is kindly directed to the Application-as-filed on Page 4, line 17 through 21 and Page 4, line 34 through Page 5, line 1.

Accordingly, in highly beneficial embodiments, the inventive food casings are formed using liquid smoke that further comprises an additive to set the liquid smoke viscosity so as to wet the liquid smoke on the inside of the casing uniformly, as recited in Claim 15 as-amended.

In expedient embodiments, the surface energy also effects uniform application of the liquid smoke, as recited in newly added Claim 17.

Applicants respectfully reiterate that the claimed invention is patentable in light of the cited references, considered either alone or in combination.

Applicants particularly respectfully submit that the only cited reference directed to smoke transport casings is US 357. Consequently, Applicants respectfully make of record that the only pertinent teachings as to the attributes and requirements of smoke transport films casings be gleaned from US 357. In sharp contrast the claimed invention, US 357 expressly requires both browning agent and an at least 5 day liquid smoke application time. The secondary references, which teach or suggest absolutely nothing regarding liquid smoke transport, do not cure these deficiencies in US 357. As noted above, the ability to form smoked sausages without either a browning agent or extended liquid smoke transport time into the casing of at least 5 days was altogether unexpected to those skilled in the art.

Applicants thus respectfully reiterate that US 357 is directed to conventional processes of applying a mixture of liquid smoke and browning agent to an at least three layered film and allowing the liquid smoke mixture to “act on (or stay in contact with)” the casing for at least 5 days. (Col. 1, lines 17 – 21 and Col. 2, lines 30 - 35). The coating of US 357 is formed from liquid smoke, browning agents and optional water. (Col. 3, lines 16 – 18). US 357 expressly notes the incorporation of browning agent on numerous occasions. (Col. 1, lines 17 – 18; Col. 2, lines 52 – 57; Col. 3, lines 25 – 27; Col. 3, lines 35 – 38; Col. 3, lines 43 – 60). In fact, US 357 indicates a minimum of 20 % browning agent within its coating mixture. (Col. 3, lines 37 – 38). In contrast to the urgings of the Office Action on Page 10, Ref. No. 26, US 357 expressly refers to its browning agent as a “natural flavoring.” (Col. 3, lines 37 – 39). US 357 further notes that the application of its “particular mixture of liquid smoke and browning agent” results in an increased depth of smoke flavor penetration. (Col. 3, lines 25 – 29).

US 357 more particularly discloses that its liquid smoke and browning agent mixture is allowed to “act on” the casing for 7 to 10 days. (Col. 3, lines 19 – 20; Col. 4, lines 12 – 13 and Col. 2, lines 58 - 60). US 357 indicates that the smoke-emulsion filled casing is stored in a bag during this time, to allow the smoke emulsion to at least partially penetrate the casing. (Col. 4, lines 12 – 14). US 357 is silent as to the surface energy of its films.

Applicants respectfully reiterate that US 357, considered as a whole, does not teach or suggest the recited liquid-smoke-impregnated food casing in which the casing is impregnated with liquid smoke, but not with an additional browning agent. Applicants respectfully reiterate that US 357, considered as a whole, clearly requires a browning agent and thus teaches away from the claimed invention.

Applicants further respectfully submit that the Office Action's urging on Page 10, Ref. No. 26 that one skilled in the art would have been motivated to have removed the browning agent to produce a product containing "fewer synthetic materials" or to lower costs is, at best, conjecture. Applicants respectfully submit that the Office Action's assertion that the browning agent of US 357 is "synthetic" is contrary to the express teachings of US 357, which expressly describes its browning agent a "natural" flavoring.

Furthermore, one skilled in the art would not be motivated to decrease costs by omitting the browning agent of US 357, as one skilled in the art would instead expect that the resulting product would require even more smoke-emulsion soak time than its current 5 to 10 days for a smoke emulsion of lesser color depth to sufficiently penetrate the casing.

Applicants further respectfully submit that there is no combination that can be gleaned from the secondary references that in any way teach the omission of a browning agent from smoke formulations, because none of the secondary references are directed to smoke transport casings and hence can provide no teaching. Applicants respectfully submit that the Office Action is instead indulging in an impermissible hindsight analysis. In contrast to the logic presented within the outstanding Office Action, Applicants' Representative respectfully submits that undesirable products are not the sole province of patentability.

And US 357 most certainly does not teach or suggest the inventive liquid-smoke-impregnated food casings that do not contain an additional browning agent and which further do not require a liquid smoke application time of at least 5 days, as recited in the claims as-amended. As noted above, it was altogether unexpected that the recited food casings could be produced without the heretofore known extensive liquid smoke application time, particularly in the further absence of additional browning agent.

US 357 also does not teach or suggest inventive food casings having a surface energy of greater than 35 dyn/cm to uniformly apply the liquid smoke and a swelling value of at least 10 %, much less that such food casings which are further either a single-layered film having a thickness of up to 130  $\mu\text{m}$  or a multilayered film having a polyamide inner layer with a thickness of up to 70  $\mu\text{m}$  would result in liquid-smoke-impregnated food casings that do not require either an additional browning agent or a time of action of the liquid smoke of at least 5 days, as further recited in Claim 1. US 357, which must be considered in its entirety for all that it teaches, instead provides a generic list of materials, including polyamides known to have inferior absorption. US 357 is also altogether silent as to both casing thickness (as correctly noted by the Examiner) and surface energy values. As will be noted in greater detail below, the cited secondary reference merely note surface energy elevation to improve meat adhesion and single layered UV barrier films having a preferable thickness of 25 to 40 microns.

US 357 thus can not teach or suggest that food casings incorporating polyamide and/or copolyamide alone as a sole or inner layer having a surface energy of at least 35 dyn/cm and either a single-layered thickness of 50 to 130  $\mu\text{m}$  or a polyamide inner layer thickness of 15 to 27  $\mu\text{m}$  in which the casing or the polyamide inner layer of the casing has a swelling value of at least 10 wt % would permit the impregnation of the casing with liquid smoke in the absence of an additional browning agent and further in the absence of a time of action of the liquid smoke of at least 5 days, as recited in Claim 13 as-amended.

US 357, merely teaching liquid smoke, browning agent and optional water, further does not teach or suggest advantageous inventive food casings formed using liquid smoke that further comprises an additive to set the viscosity, much less setting the viscosity to ensure uniform liquid smoke wetting, as recited in newly added Claim 15. The secondary references, which are not directed to smoke transport films, do not cure this deficiency in US 357.

Accordingly, Applicants respectfully reiterate that the claimed invention is patentable in light of US 357, considered either alone or in combination with the remaining art of record.

As indicated above, the secondary references do not cure the deficiencies in US 357.

In contrast to the recited liquid-smoke-impregnated food casings, US 427 is directed to single-layered films with improved UV barrier. US 427 initially discloses that nylon is thought to provide “unsteady” stretching behavior. (Col. 2, lines 12 – 26). The impetus of US 427, considered in its entirety, is thus the formation of single-layered films from a mixture of polyamide, polyolefin and pigment. (Col. 3, lines 24 – 34). The polyolefin is present in amounts of up to 30%. (Col. 4, lines 59 – 61). US 427 touts that its films have a “relatively low” thickness in comparison to “conventional sausage casings made of polyamide,” preferably ranging from about 25 to 40 microns. (Col. 6, lines 2 – 5). US 427 includes a Comparative Example formed from a single-layered film having a thickness ranging from 39 to 41  $\mu\text{m}$ . (Col. 7, Comp. Ex. 1). US 427 is silent as to the swelling values and surface energy of its films.

Applicants respectfully reiterate that US 427, directed to improved UV barrier properties, does not teach or suggest the recited liquid-smoke-impregnated food casing, much less such casings impregnated with liquid smoke, but not with an additional browning agent, and most certainly not such liquid-smoke-impregnated food casings that do not require a 5 day soak time.

Accordingly, Applicants respectfully reiterate that the claimed invention is patentable in light of US 427, considered either alone or in combination with the remaining art of record.



Similar to the polyolefin blend casings of US 427, US 410 is generally directed to casings incorporating a polyamide layer disposed between outermost layers of polyolefin. (Col. 2, lines 5 – 10; Col. 3, lines 55 – 65; Col. 4, lines 35 – 36; Col. 4, lines 45 – 46; Col. 16, lines 6 – 9; and Col. 21, lines 3 – 14). The center polyamide layer of US 410 purportedly produces films that do not neck down during back-seaming. (Col. 3, lines 20 – 26; Col. 18, lines 17 – 18; Col. 18, lines 44 – 46).

Considered in its entirety for all that it teaches, US 410 expressly cautions that use of polyamide in contact with food can provide “too much meat-adhesion” and further that polyamides are “relatively expensive.” (Col. 3, lines 42 – 48). US 410 thus goes on to teach a food contact layer formed from anhydride-containing polyolefin. (Col. 3, lines 51 – 55). US 410 generically notes that its polyolefin food contact layers may be corona treated, especially to increase adhesion of its films to “proteinaceous material.” (Col. 5, lines 55 – 56; Col. 27, line 64 – Col. 28, line 3 and Col. 28, lines 13 – 15). US 410 indicates on multiple occasions that its interior film layer or polymer can have a surface energy of less than about 34 dyne/cm. (Col. 6, lines 20 – 26; Col. 17, lines 15 – 20; Claim 27 and Abstract). In fact, US 410 teaches that the polymer used to form the interior of its films preferably has a surface energy of less than 32 dyne/cm. (Col. 6, lines 42 – 44 and Col. 17, line 18). US 410 generically indicates that casings having a meat-adhesion layer formed from polar polymer “can be” corona treated, but the films do not “require” corona treatment. (Col. 17, line 39 – 45).

US 410 thus does not teach or suggest the claims as-amended.

US 410, broadly directed to films having improved processing characteristics, does not teach or suggest the inventive liquid-smoke-impregnated food casings, much less such casings impregnated on the inside with liquid smoke but not with an additional browning agent, and most certainly not such liquid-smoke-impregnated food casings that do not require a 5 day soak time.

Accordingly, Applicants respectfully submit that the claimed invention is patentable in light of US 410, considered either alone or in combination with the remaining art of record.

The claimed invention is likewise patentable in further light of US 295.

Applicants respectfully reiterate that US 295 is directed to sausage casings that avoid tightening lubricating agents and moisture retaining agents. (Col. 2, lines 62 – Col. 3, line 2). In contrast to the inventive smoke-containing casings, US 295 expressly states that its casings contain “no additional additives,” other than water. (Col. 5, lines 28 – 31). US 295 indicates absorption of up to 8 % water for polyhexamethylene adipamide. (Col. 5, lines 15 – 18). US 295 further indicates that storage time may be used “to ensure the even distribution of the water” within the casing walls. (Col. 6, lines 1 – 5).

Applicants take this opportunity to respectfully make of record that US 295, citing the water uptake of its casings in “wt %” only, does not provide “swelling values.” As noted in the Application-as-filed, on Page 4, lines 12 through 16, swelling values and corresponding weight percentages are not in one-for-one correspondence. For example, a swelling value of 25 % can translate into an up to 100 weight percent absorption.

US 295, generically directed to casings avoiding lubricating and moisture retaining agents that further contain no additional additives, does not teach or suggest inventive liquid-smoke-impregnated food casings, much less that casings incorporating polyamide or co-polyamide which further exhibit a surface energy of at least 35 dyn/cm may be impregnated on the inside with liquid smoke in the absence of an additional browning agent, and most certainly not such liquid-smoke-impregnated food casings that do not require a 5 day soak time.

Accordingly, Applicants respectfully submit that the claimed invention is patentable in light of US 295, considered either alone or in combination with the remaining art of record.

Applicants respectfully reiterate that there would have been no motivation to have combined US 357, US 427, US 410 and US 295. US 357 is directed to food casings containing a mixture of liquid smoke and browning agent that require a 5 to 10 day smoke application time.

US 427 is directed to single-layered UV resistant food casings that include polyolefin. US 410 is directed to films that do not neck down during back-seaming having a polyolefin or "polar" food-contact-layer which may have a wide range of surface energy values. US 295 is directed to sausage casings avoiding tightening lubricating agents and moisture retaining agents. These are also altogether different problems solved.

Applicants respectfully submit that food casings suitable for one application will not automatically work in another application, as each application has its own unique requirements. Therefore, a food casing for one application may not suggest a solution for another application.

However, even if one had combined US 357, US 427, US 410 and US 295 (which they did not), the claimed invention would not result.

The combination specifically fails to teach or suggest that food casings incorporating polyamide or co-polyamide alone as a sole or inside layer having a surface energy of greater than 35 dyn/cm and either single-layered thickness of 20 to 130  $\mu\text{m}$  or a polyamide inner layer thickness of 15 to 70  $\mu\text{m}$  in which the casing or the polyamide inner layer of the casing has a swelling value of at least 10 % would permit the impregnation of the casing with liquid smoke that does not require either an additional browning agent or a time of action of the liquid smoke of at least 5 days, as recited in Claim 1 as-amended. US 357 clearly requires both a browning agent and a 5 to 10 day smoke application time. US 427 is directed to single-layered films with improved UV barrier formed from a polyolefin-containing mixture having a relatively low thickness. US 410 generically indicates that "polar" layers can be made to have any of a wide range of surface energies, including a surface energy of less than 32 dyne/cm. US 295 teaches absorption of 8 % water containing no additional additives.

The combination thus can not teach or suggest that food casings incorporating polyamide and/or copolyamide alone as a sole or inner layer having a surface energy of greater than 35 dyn/cm and either a single-layered thickness of 50 to 130  $\mu\text{m}$  or a polyamide inner layer thickness of 15 to 27  $\mu\text{m}$  in which the casing or the polyamide inner layer of the casing has a swelling value of at least 10 wt % would permit the impregnation of the casing with liquid smoke in the absence of both an additional browning agent and a time of action of the liquid smoke of at least 5 days, as recited in Claim 13 as-amended. As noted above, US 357 requires a browning agent and liquid smoke application time of up to 10 days. US 427 is solely directed to mono-layered polyolefin-containing casings having a thickness lower than 50 microns. US 410 teaches film layers having a wide range of surface energies, including surface energies of less than 32 dyne/cm, to improve meat adhesion. US 295 teaches absorption of water alone.

And the combination most certainly does not teach or suggest advantageous inventive food casings formed using liquid smoke that further comprises an additive to set the viscosity and thereby wet the liquid smoke on the inside of the casing uniformly, as recited in Claim 15 as-amended. US 357 is altogether silent as to viscosity additives. The secondary references are not directed to smoke transport films and thus are likewise silent as to liquid smoke viscosity additives. The only reference to coating uniformity within the secondary references is US 295's teaching of storage time to ensure even distribution of its water.

Nor does the combination teach or suggest that the recited surface energy is selected so as to effect uniform application of the liquid smoke, as recited in newly added Claim 17. US 357 is silent as to surface energies, while US 410 teaches a broad range of surface energies, including a surface energy of less than 32 dynes/cm, that are selected to impart meat-adhesion. US 295 teaches storage time to ensure even distribution of its water.

Accordingly, Applicants respectfully reiterate that the claimed invention is patentable in light of US 357, US 427, US 410 and US 295 considered either alone or in any combination.

**CONCLUSION**

It is respectfully submitted that Applicants have made a significant and important contribution to the art, which is neither disclosed nor suggested in the art. It is believed that all of pending Claims 1, 3 through 8 and 12 through 17 are now in condition for immediate allowance. It is requested that the Examiner telephone the undersigned if any questions remain to expedite examination of this application.

It is not believed that extensions of time or fees are required, beyond those which may otherwise be provided for in documents accompanying this paper. However, in the event that additional extensions of time and/or fees are necessary to allow consideration of this paper, such extensions are hereby petitioned under 37 CFR § 1.136(a), and any fee required is hereby authorized to be charged to Deposit Account No. 50-2193.

Respectfully submitted,

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